DEVELOPING DISTANCE ESTIMATION SKILL AMONG VISUALLY IMPAIRED STUDENTS

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Introduction

Spatial ability is a collection of cognitive skills which are responsible for the performance of the individual in different walks of life. In spatial ability, Distance Estimation skill is important for the visually impaired persons. Distance Estimation is crucial for judgment of size, weight, and approximately calculates the distance. Distance is a numerical description of how far and near apart from the objects. It helps visually impaired persons to walk through environment judging the distance. A study was conducted among visually impaired students and blindfolded sighted students to examine the distance estimation ability. Here, in this study visually impaired students were considered as Experimental group and blindfolded sighted as Control group.

The main objective of the study was to find out the impact of intervention on developing distance estimation skill.

Sample

The sample selected for the study consisted of 30 students, 15 visually impaired and 15 blindfolded sighted students. The visually impaired students were in the Experimental group and the blindfolded sighted in Control group.

Assessment of Distance Estimation Skill

Distance Estimation ability of the samples was tested using a checklist prepared by the investigator. The test consisted of two subtests with 5 items in each. The investigator used a Magnetic Board of 35 × 25cm and three pieces of magnets for testing.

Each student was tested individually, in two sub test. In the first subtest, two magnet pieces were fixed on the board with a distance of 10cm, 15cm, 20cm, and 25cm in the positions: Horizontal, Vertical, Diagonal, Near to student and Far from the student. Each distance was fixed to each position (i.e.) 10cm for Horizontal, 20cm for Vertical and 15cm for Diagonal.

Twenty five centimeter (25cm) was fixed for Far when the magnetic board is Far from the student for far distance and 25cm was fixed when the board is near the student for near distance. The student had to estimate the distance approximately. If the subject could estimate the distance with 80% accuracy, he was given one score, if not the score is zero.

The maximum score for this subtest is five for the five types of distance.

10cm Horizontal   20cm Vertical   15cm Diagonal
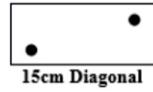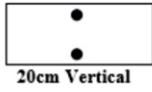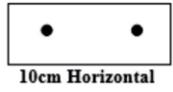
In the second subtest, three magnets were fixed on the board so as to form an angle: Acute angle, Obtuse angle, Right Triangle, and Equilateral triangle. The student had to identify the angle. One score was given for correct response and for wrong response Zero score was given. Since this subtest had five items, the maximum score was five. Hence the maximum score for the Distance Estimation test is five.

Acute Angle   Obtuse Angle   Right Triangle   Equilateral Triangle
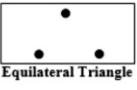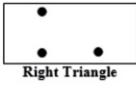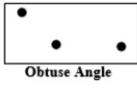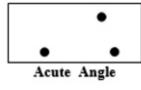
After pretesting, intervention was given to the experimental group for 20 days, 45 minutes each day and thus making a total of 15 hours for each individual. Intervention Strategies

The intervention strategies include:
1. Teaching centimeter using embossed inch/cm tape.

2. Measuring distance using meter tape and train to measure table, bench, block board, and wall. Making noise standing at a particular distance say 3meter and ask the visually impaired students to identify the approximate distance the noise was made.

3. Directional concept such as East, West, North, South and diagonal sides were taught.

4. Angles were taught using hand and also protractor

5. Positional concept such as Horizontal, Vertical, Diagonal, near and fare have taught using 3 dimensional items and 2 dimensional tactile diagrams.

Result 1
Distance Estimation of Experimental Group

Group	Test	Mean	S.D	't'-value
Experimental	Pre	0.73	1.2	29.5**
	Post	9.93	0.26	

Significant at 0.01 level

It is evident from the above table, that the t value for the Experimental Group for Distance Estimation is 29.5 which is significant at 0.01 level. Hence it is concluded that the intervention was found to be effective for developing Distance Estimation skill of visually impaired students.

Result 2
Distance Estimation of Control Group

Group	Test	Mean	S.D	't'-value
Control	Pre	7.27	2.7	1.87 Ns
	Post	7.67	2.35	

NS. Not Significant

It is evident from the above table, that the t value for the Control Group for Distance Estimation is 1.87 which is not significant. It indicates that there is no significant difference between Control Group (Blindfolded Sighted) in pre and post scores.

Hence it is concluded that the Control group secured the Distance Estimation score to the same extent in both tests.

Result 3
Distance Estimation of Experimental and Control Group

Test	Mean		S.D		't'-value
	Group		Group		
	Experimental	Control	Experimental	Control	
Pre	0.73	7.27	1.2	2.7	10.3**
Post	9.93	7.67	0.26	2.35	3.8**

***Significant at 0.01 level*

It is evident that the t value for the pre score of Experimental and Control Group pre score for Distance Estimation is 10.3 which is significant at 0.01 level. It indicates that the Control Group (Blindfolded Sighted) secured higher score (M=7.27) than the Experimental Group (Visually Impaired) (M=0.73).Hence it is concluded that the Control group was found to be acquired Distance Estimation skill higher than Experimental group in pretest.

While considering the post score of the Control and Experimental group, the Experimental Group secured higher score with the t value 3.8 which is significant at 0.01 level. It indicates that the Experimental Group secured higher score (M=9.93) than the Control Group (M=7.67). Hence it is concluded that the intervention was found to be effective developing Distance Estimation skill of visually impaired students.

Thus the intervention adopted in the study was found to be effective to the most important spatial skill i.e. Distance Estimation skill which is paramount for the visually impaired persons for developing orientation in the environment and just the distance for their safe and independent mobility. It helps their learning subjects particularly mathematics and science.

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